

Office of Environmental Laboratory Certification

South Carolina Department of Health and Environmental Control
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The *UPDATE*

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WS and WP Studies now through December 31 each year...

The Office has decided to extend the Water Supply (WS) and Water Pollution (WP) studies from January through December of each year. This will allow the laboratories more flexibility in meeting the annual PT requirement. Please remember, it is the laboratory's responsibility to order all required samples and to have the results submitted by the PT Provider to this Office **NO LATER THAN DECEMBER 31 each year**. Participating in a study that opens in December and closes in January will not meet the annual PT requirement. Acceptable studies must **OPEN and CLOSE** within the calendar year for which they are needed. If you have questions regarding the PT Studies, please contact Connie Turner (WS questions) at (803) 896-0976 or Leigh Plummer (WP questions) at (803) 896-0978.

EPA Methods 1669 and 1631C now being added to permits for low-level mercury analysis...

The Bureau of Water is now adding the low-level mercury methods 1669 and 1631C to permits. These methods require much more involved sampling and analysis procedures. The laboratories are required to maintain "clean-room" status for this analysis. Sampling equipment must be tested prior to use in the field and extra blanks are required. Laboratories interested in becoming certified for this method should contact this Office. All personnel sampling for this method must follow EPA Method 1669. All equipment must be prepared and handled in accordance with EPA Method 1669. This means that the sampling equipment in addition to the collection bottles must come from a laboratory certified for EPA Method 1631C. A copy of these methods can be downloaded from the EPA website at www.epa.gov.

Updated Website...

The Office website has been updated to include more information and more forms. Please visit the site at www.scdhec.net/labcert and give us your comments and suggestions. The site has generated lots of interest thus far and has helped speed the application process by having downloadable forms such as the application. In the future, we hope to include a list of commercial laboratories, fillable forms, and on-line storage of completed applications.

Chlorite certification...

This Office offers certification for chlorite by both the daily analysis (amperometric titration) and the monthly analysis (ion chromatography) methods. An example analysis form can be obtained on our

website or by calling this Office and requesting one. The titration method is a step by step process that requires detailed analysis records. When completing the record, please ensure that all data is recorded. If there are any questions regarding how to fill out this form or what information to document, please contact this Office.

Please Note: If chlorine dioxide is suspected in the sample, the sample must be purged with nitrogen or argon gas for 5 minutes prior to the addition of the EDA preservative. If the sample is not purged first, the chlorine dioxide could form chlorite and make the sample results higher than they should be. Contact your contract laboratory if you have any questions about sample collection.

Applying for Certification...

When applying for certification, please be sure to include all requested information and ensure that the information is properly labeled. This will help speed the application process. The website offers application checklists which list all of the required documentation to be submitted. For organic analyses, the Method Detection Limit (MDL) and Initial Demonstration of Capability (IDOC) studies must be completed with all required information. This includes the sample preparation and clean-up METHOD NUMBERS used. The summary sheets submitted must include only one instrument. A summary MDLs for all instruments in use in the laboratory is not acceptable.

Please submit only the application fee when applying. The laboratory will be invoiced for any applicable fees. If the laboratory submits a check for more or less than \$125.00, the application cannot be processed until a check for exactly \$125.00 is received. Please contact this Office with specific questions regarding the application process.

Proficiency Study (PT) Results...

To ensure that your laboratory is properly credited with the PT results submitted, the report submitted by the PT Provider to this Office **must include the LABORATORY'S EPA AND STATE ID NUMBERS**. This Office receives results from almost 700 laboratories. Most laboratories submit 4 or more PT study results. With this volume of data being received and processed, if the laboratory's ID numbers do not appear on the reports, it is possible that the laboratory may not be properly credited. **This also applies to the method number reported. The laboratory will likely receive a 15-day decertification letter if the incorrect method number is reported.** Please review your results when you get them from the PT Provider to ensure that the ID numbers and method numbers appear on your results as they appear on your SC certificate. **For out-of-state laboratories, your EPA ID number must appear on the results.** Ensuring that this information is on the reports will avoid confusion and possible decertification. **Even if the laboratory reported these numbers, they do not always appear on the PT Providers report sent to this Office. Please ensure that your copy of the results from the PT Provider include all required information.**

On-Line Turbidimeters...

A guidance document regarding the calibration, calibration frequency, and calibration acceptance criteria is available on our website or by calling this Office. The meters must be checked weekly at 0.5NTU. The meter must be within 10% of the true value. Please contact this Office with specific questions regarding the use of on-line turbidimeters.

DMR-QA...

All certified laboratories are encouraged to participate in the Water Pollution study. If you are required to submit DMR-QA data, this Office encourages you to participate in a WP study and use those results on your DMR-QA forms in addition to the WP forms. This is because the DMR-QA results will not

be issued until December. This does not allow the laboratory time to order and analyze repeat samples for certification purposes. You must contact your PT Provider to determine which WP studies can be used for DMR-QA reporting. The results must be submitted by the WP due date. The Provider can assist the laboratory with proper reporting schedules. This Office also encourages all DMR-QA participants to wait until the blue books are received before proceeding with either the WP or DMR-QA analyses.

What is all the talk about PQLs???

PQLs are Practical Quantitation Limits. SCDHEC has come up with a list of PQLs to be used for NPDES reporting. This comes from Regulation 61-68. The PQL is defined as “the concentration at which the entire analytical system must give a recognizable signal and acceptable calibration point. It is the concentration in a sample that is equivalent to concentration of the lowest calibration standard analyzed by a specific analytical procedure, assuming that all the method-specific sample weights, volumes, and processing steps have been followed.” In other words, the PQL is equal to the lowest non-zero standard on your calibration curve. SCDHEC has come up with standard PQLs that every laboratory reporting compliance data is expected to achieve. If the laboratory meets the PQL as defined by SCDHEC and the sample has a concentration below that PQL, then the facility may report zero as the result on the DMR form. Please see the following examples.

“Reasonable potential exists”: If the permit limit is 1mg/L and the SCDHEC PQL is 0.5mg/L and the sample result is <2mg/L, the facility is out of compliance because it cannot be determined that the sample is below 1mg/L. A zero cannot be reported on the DMR because the laboratory’s PQL is 2 which is higher than 1.

“Complies with permit”: If the permit limit is 1mg/L and the SCDHEC PQL is 2mg/L and the sample result is <2mg/L, the facility may report zero on the DMR because the laboratory’s PQL is equal to the SCDHEC PQL of 2mg/L. The comments section of the DMR must indicate that a PQL of 2mg/L was used in order to report the zero.

“Out of Compliance with Permit”: If the permit limit is 0.011mg/L and the SCDHEC PQL is 0.05mg/L and the laboratory reports 0.02mg/L, the facility is out of compliance because the laboratory reported a number greater than the permit limit which means the laboratory PQL is lower than the SCDHEC PQL. This means that the laboratory can accurately detect a sample concentration of 0.02mg/L which documents that the facility sample has exceeded the 0.011mg/L permit limit. Because of this, it is always best to use SCDHEC PQLs when the laboratory reports data to the facilities.

What is the facility’s responsibility? Make sure that you use a certified laboratory that can meet the published PQLs. There are many certified laboratories and they may use different equipment which would allow some to meet the PQL and others not. Make sure that the DMR form is completed properly with the certified lab ID number beside each analysis performed by the contract lab. Make sure that the correct number is reported as the result on the DMR form.

If you have questions regarding the PQL that the facility needs to meet, or how to report the sample results on your DMR, please contact Melinda Vickers at (803) 898-4186.

Spiking Solutions for extractable organics...

When you are ordering and/or preparing your spiking mixtures for organic analyses, you must order and/or prepare them in a water miscible solvent such as methanol or acetone. If the standards are ordered or prepared in the solvent used for extraction, the extraction efficiency is not being measured. This is addressed in EPA Method 3500. This must be addressed in the laboratory’s SOPs by indicating what solvent is used to prepare the spiking solutions and what solvent the stock standards are prepared in.

EPA Method 8151A Herbicide Standards – Acids or Esters???

The US EPA Office of Solid Waste states in the “Frequently Asked Questions” on their Website, that EPA Method 8151A involves the derivatization of the target herbicides in the sample extracts, except in very specific circumstances. As a result the calibration standards must undergo the same derivatization process as samples (although it is not necessary to derivatize them in the same batch as the samples). Therefore, if the samples are to be derivatized, then the standards must be prepared from the target herbicides and derivatized to their esters as well, using the same procedure.

Section 5.14.1 of EPA Method 8151A states to derivatize each calibration standard prepared from free acids in a 10-mL K-D concentrator tube, according to the procedures beginning at Section 7.5. Since derivatized standards are used results are calculated using the calculation in Method 8000 and there will not be a correction for the molecular weight of the methyl ester versus the acid herbicide.

The derivatized calibration standards are good for six months from the date of preparation. These calibration standards must be traceable from the data system reports to the derivatization records and to the acid stock standard solutions.

The acid standards must also be used for spiking to verify the efficiency of the extraction and derivatization procedure employed. These acid stock standards are good for two months from the date of preparation. The website states that you must use the form of the analyte that matches the form that is present in the samples, in other words, the parent acids, not the methyl esters.

Standard Methods 6640B addresses the use of methyl ester standards, but it is strongly recommended that procedural standards be used for this method even though it is not addressed in the method.

Analysis of n-Nitrosodiphenylamine by EPA Method 8270C

The analyte n-nitrosodiphenylamine, when analyzed by EPA Method 8270C, decomposes in the gas chromatographic inlet and cannot be separated from diphenylamine. It is now accepted to report the combined result for n-nitrosodiphenylamine/diphenylamine for either n-nitrosodiphenylamine and/or diphenylamine. Laboratories analyzing samples for n-nitrosodiphenylamine must report their results as n-nitrosodiphenylamine/diphenylamine unless using an alternate analytical technique.

A New Revision of the Application is now Available...

The Application for Certification has been revised to include new methods, correct errors, etc. You can download a copy off of our website or contact this Office to request a copy be sent to you.

Decertification – What Does It mean and How Does It Work???

If your laboratory finds itself in the unfortunate position of facing decertification, your laboratory is issued a “Decertification Letter”. This letter documents that the laboratory has 15 days from the receipt of the letter to appeal the decertification decision. Please be reminded that this means that the laboratory is **decertified in accordance with the conditions specified in the letter for the parameters and methods identified in the letter**. If the laboratory feels that the decertification action has been taken wrongfully, the laboratory has the right to appeal to the Administrative Law Judge (ALJ) Division and have the decision overruled. To file for the hearing, the laboratory must complete the “Request for Hearing Process” by submitting a letter requesting a hearing to the addresses included with the Decertification letter. By doing this, the laboratory is requesting that the laboratory and the Office appear in court to plead their case before the ALJ.

How might this affect your laboratory? The biggest impact will be during the Proficiency Testing review process. In the past, the laboratory has had 15 days to submit acceptable results to avoid decertification. This is no longer the case. If this Office does not have acceptable PT results for the laboratory by December 31 each year for both the Water Supply (WS) and Water Pollution (WP) studies, the laboratory will be decertified upon review of the PT data. **For this reason, it is critical that the laboratory have acceptable PT studies submitted to the Office no later than December 31 in order to avoid decertification.**

If you have any questions regarding this process, please contact this Office.

NIST-Traceable Thermometers...

What is considered a NIST-traceable thermometer? It is one that comes with a certificate from the manufacturer stating that it has been calibrated against NIST primary standards. A laboratory cannot use a NIST-traceable thermometer to check another thermometer and then use the second thermometer to check other thermometers. What does this mean? See below.

If I have two thermometers in my laboratory a NIST-traceable and a regular lab thermometer, I must have the NIST-traceable calibrated every five years showing that it is NIST-traceable. The regular lab thermometer has to be checked annually against the NIST-traceable thermometer.

If I have checked the regular lab thermometer against the NIST-traceable, can I use the regular thermometer to check other thermometers? **No.** Only a certified NIST-traceable thermometer can be used for the annual check of regular laboratory thermometers.

Can my commercial laboratory recalibrate my NIST-traceable thermometer? Probably not. The laboratory recertifying the thermometer must use NIST primary calibration standards and procedures. Manufacturers such as ERTCO, H-B, etc. are capable of recertifying NIST-traceable thermometers.

We hope this article clarifies some of the confusion over what is considered a NIST-traceable thermometer.

Water Supply (WS) Study Parameters

Trace Metals

Antimony
Arsenic
Barium
Beryllium
Boron
Cadmium
Chromium
Copper
Lead
Manganese
Mercury
Molybdenum
Nickel
Selenium
Sodium
Thallium
Zinc

Inorganic Parameters

Nitrate – Nitrogen
Nitrite – Nitrogen
Fluoride
Orthophosphate
Residual Chlorine
Cyanide
Sulfate
Total Organic Carbon (TOC)
Alkalinity
Calcium-Hardness
Residue, Filterable (TDS)
Hydrogen-Ion Conc. (pH)
Turbidity
Bromate
Bromide
Chlorate
Chlorite

Miscellaneous

*Asbestos
Chloral Hydrate

Microbiology

Total Coliform (pres./absence)
This includes fecal coliform
analysis as pres./absence for
the Total Coliform Rule

PCBs

Decachlorobiphenyl

Organic Groups (80% must
be correct to be approved for
these groups of analytes –
volatiles and haloacetic acids
only)

Volatiles

Benzene
Carbon Tetrachloride
Chlorobenzene
1,2-dichlorobenzene
1,4-dichlorobenzene
1,2-dichloroethane
1,1-dichloroethylene
Cis-1,2-dichloroethylene
Trans-1,2-dichloroethylene
Dichloromethane
1,2-dichloropropane
Ethylbenzene
Styrene
Tetrachloroethylene
Toluene
1,1,1-trichloroethane
1,1,2-trichloroethane
Total xylenes

Haloacetic Acids

Bromochloroacetic Acid
Dibromoacetic Acid
Dichloroacetic Acid
Monobromoacetic Acid
Trichloroacetic Acid

Vinyl Chloride

Vinyl Chloride

Trihalomethanes (all four
trihalomethanes must be
analyzed correctly to be
certified for trihalomethanes)
Bromodichloromethane
Bromoform
Chloroform
Dibromochloromethane

Herbicides

2,4 - D
Dalapon
Dicamba
Dinoseb
Pentachlorophenol
Picloram
2,4,5 – TP (silvex)

Pesticides

Alachlor
Aldrin
Atrazine
Chlordane (total)
Dieldrin
Endrin
Heptachlor
Heptachlor epoxide
Hexachlorobenzene
Hexachlorocyclopentadiene
Lindane
Methoxychlor
Propachlor
Simazine
Toxaphene
Trifluralin

SOCs

Diquat
Endothall
Glyphosate
Di (2-ethylhexyl) adipate
Di (2-ethylhexyl) Phthalate
Benzo(a)pyrene
Aldicarb
Aldicarb sulfone
Aldicarb sulfoxide
Carbofuran
Methomyl
Oxamyl (vydate)
EDB and DBCP (must get both
correct to be certified for these)

*Radiologicals

Gamma Isotopic
Iodine
Gross Alpha
Gross Beta
Tritium
Uranium
Radium – 226
Radium – 228
Strontium – 89
Strontium – 90

Dioxin

2,3,7,8Tetrachlorodibenzodioxin

Water Pollution (WP) Study Parameters

Trace Metals

Aluminum
Antimony
Arsenic
Beryllium
Cadmium
Chromium
Cobalt
Copper
Iron
Lead
Manganese
Mercury
Molybdenum
Nickel
Selenium
Silver
Strontium
Thallium
Titanium
Vanadium
Zinc

Demands

Total Org. Carbon (TOC)
Chem. Oxygen Demand (COD)
5-day BOD
Carbonaceous BOD

Inorganic – Residues

Non-filterable (TSS)
Filterable (TDS)

Inorganic - Mineral

Alkalinity
Calcium
Chloride
Specific Conductance
Fluoride
Total Hardness
Magnesium
Potassium
Sodium
Sulfate

Inorganic - Nutrients

Ammonia
Nitrate-Nitrogen
Orthophosphate
Total Kjeldahl Nitrogen (TKN)
Total Phosphorus

Inorganic - Misc.

Total Cyanide
Total Residual Chlorine
Hydrogen-Ion Conc. (pH)
Total Phenolics
Oil & Grease

Pesticides

Aldrin
Chlordane (Total)
Dieldrin
DDD
DDE
DDT
Heptachlor
Heptachlor Epoxide (beta)

PCBs in Water

Aroclor 1016 or 1242
Aroclor 1232
Aroclor 1248
Aroclor 1254
Aroclor 1260

PCBs in Oil

PCBs in Oil 1016/1242
PCB in Oil 1254
PCB in Oil 1260

Volatile Halocarbons

1,2-dichloroethane
Chloroform
1,1,1-trichloroethane
Trichloroethene
Carbon Tetrachloride
Tetrachloroethene
Bromodichloromethane
Dibromochloromethane
Bromoform
Methylene Chloride
Chlorobenzene

Volatile Aromatics

Benzene
Toluene
Ethylbenzene
1,2-dichlorobenzene
1,3-dichlorobenzene
1,4-dichlorobenzene



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